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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,862	03/26/2004	Feng Chen	V0690.0025	7593

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EXAMINER

BARNHART, LORA ELIZABETH

ART UNIT	PAPER NUMBER
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1651

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/809,862

Applicant(s)

CHEN, FENG

Examiner

Lora E Bamhart

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 2 and 12 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 1 and 11 each recite a medium having a C/N ratio of at least about 18, and this limitation is repeated without further conditions in dependent claims 2 and 12.

For purposes of clarity, applicant is requested to amend claims 1, 2, 5, 9, 11 and 12, which recite "a C/N ratio" to recite "a carbon:nitrogen ratio."

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1 and 11 recite a carbon:nitrogen ratio of "at least about 18", but it is not clear how this value was calculated, i.e. molar ratio of atoms, mass ratio of compounds, etc. The specification defines glucose and nitrate as the carbon and nitrogen sources in the cultures (p. 8, paragraph 2), and Figure 3 discloses initial carbon:nitrogen ratios of 18, 55, 90 and 180. The concentration of glucose in three separate experiments is disclosed to be 10g/L, 30g/L or 50g/L (Figure 3), while the only value for nitrate concentration is 0.75g/L (p.4). It is not clear how

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applicant is determining the carbon:nitrogen ratio, as the molar ratios for carbon atoms to nitrogen atoms using the above numbers are approximately 37, 113 and 189, respectively, and the mass ratios for glucose to sodium nitrate using the above numbers are approximately 13, 40, and 67, respectively. Clarification is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used **by others** in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(f) he did not himself invent the subject matter sought to be patented.

Claims 1, 2, 4-6, 8-12, 14 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Farrow et al. (1966, U.S. Patent 3,280,502; reference A). The claims are drawn to a method for producing a carotenoid comprising culturing *Chlorella* in the dark in a medium having a carbon:nitrogen ratio of at least 18. In some dependent claims, the medium contains glucose.

U.S. '502 teaches a process for the preparation of lutein, a carotenoid, comprising culturing *Chlorella pyrenoidosa* in the dark. The medium of U.S. '502 comprises 60g glucose and 2g potassium nitrate per liter of culture medium (column 4, lines 25-55; Example 1).

Claims 1-16 are rejected under 35 U.S.C. 102(a) as being anticipated by Ip et al. (2004, Process Biochemistry 39:1761-1766; reference U; available online 11/4/2003).

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The claims are drawn to a method as described above. In some dependent claims, the *Chlorella* is *C. zofingiensis*.

Ip et al. teach a method for producing astaxanthin, a ketocarotenoid, by culturing *Chlorella zofingiensis* on modified Bristol's medium to which glucose and nitrate have been added. Ip et al. disclose that astaxanthin production by *C. zofingiensis* in the dark is maximized when the growth media comprises high glucose (Figure 2) or low nitrate (Figure 4) levels. Specifically, the carbon:nitrogen molar ratios of Ip et al. range from 25 to 206 (0.55g/L sodium nitrate and 5-40g/L glucose, p.1762, column 2).

Claims 1-16 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter. The authorship of Ip et al., reference U, does not match the inventive entity in the instant application although the subject matter appears to be identical.

No claims are allowed. No claims are free of the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lora E Barnhart whose telephone number is 571-272-1928. The examiner can normally be reached on Monday-Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lora E Barnhart



SANDRA E. SAUCIER
PRIMARY EXAMINER